

REMARKS

Claims 3-58 are presently pending in the application. Claims 19-22 and 39-58 remain withdrawn from consideration. Claims 3-10 and 23-30 are generic.

Claims 3 and 4 have been amended to recite that the compositions do not intentionally contain an element whose use is prohibited due to its harmful effects on a living body, which is supported in the present application publication at least in paragraph [0008]. No new matter has been added by these amendments, and entry is respectfully requested.

Applicant acknowledges and appreciates the time and consideration afforded to Applicant's undersigned representative Sandra Katz during a brief telephone interview on August 17, 2006. During the interview, the Examiner suggested amending the claims to recite that the claimed compositions do not intentionally contain elements whose use is prohibited due to their harmful effects on living bodies. The Examiner noted that such amendments would be supported by the previously submitted documentation which describes legislation limiting or restricting the inclusion of elements, such as Cd, due to their harmful effects. Further, the Examiner acknowledged that such amendments should be effective at overcoming the prior art rejections based on JP '025, since Cd is intentionally included in the alloy composition of JP '025. Accordingly, it is respectfully submitted that in view of the present amendments to positively recite such an attribute, the present claims are in compliance with § 112 and patentable over the prior art of record. The arguments below are being provided merely to complete the record.

Formal Rejection

In the Advisory Action, the Examiner has maintained the formal rejection of claims 3-18 and 23-28 under 35 U.S.C. § 112, second paragraph, as being indefinite with regard to the phrase "wherein the composition does not intentionally contain an element which is harmful to a living body." The Examiner argues that Applicant's previous arguments are not directed toward the claimed invention because the claims are not limited to elements which are harmful to people, to those which are restricted by the European Union or California, or those which are known to be harmful in electrical or electronic devices. Therefore, the Examiner maintains that one skilled in

the art would not be able to determine the scope of which elements are to be excluded. Applicants respectfully traverse this rejection as follows.

As previously explained, the claims have been amended to recite that the compositions do not intentionally contain an element whose use is prohibited due to its harmful effects on living bodies. Applicant submits that one skilled in the art would easily be able to determine exactly which elements are to be excluded, since prohibitions against including particular elements are well known. For example, as previously explained on the record, in February 2003, the European Union adopted the Restriction of Hazardous Substances Directive (RoHS), which restricts the use of Pb, Hg, Cd, Cr⁶⁺, PBB and PBDE in electrical and electronic equipment to 0.1% by weight, or 0.01% by weight for Cd. Similar legislation has been introduced in the United States. Further, in California, new recycling fees have been imposed on electronic waste due to the presence of Cd, Hg, and Pb in these products, which must be disposed of properly. It is noted that these pieces of legislation which are described are not meant to be limiting, just to provide examples of elements whose use is prohibited due to harmful effects on living bodies. Such elements (including Pb, Hg, and Cd) are not intentionally included in the presently claimed compositions. Accordingly, it is respectfully submitted that the claims are definite and in full compliance with § 112. Reconsideration and withdrawal of the § 112 rejection are respectfully requested.

Prior Art Rejections Under 35 U.S.C. § 103(a)

The Examiner has maintained the rejections of claims 3 and 5 under 35 U.S.C. § 103(a) as being unpatentable over JP 11-40025 (“JP ‘025”) in view of an article by Lee et al. (“Lee”) and the rejections of claims 4, 6, 7-10, 11-18, and 23-38 under 35 U.S.C. § 103(a) as being unpatentable over JP ‘025 in view of Lee and further in view of JP 2001-266724 (“JP ‘724”), JP 11-306940 (“JP ‘940”), JP 40-3110732 (“JP ‘732”), and/or GB 2028608 (“GB ‘608”) for the reasons set forth previously. In response to Applicant’s previous arguments, the Examiner argues that the feature on which Applicant relied (excluding elements which are harmful to people) was not recited in the claims. Applicant respectfully traverses these rejections and the arguments in support thereof for the reasons set forth previously, which Applicant relies upon in full, and for the additional reasons which follow, and respectfully requests reconsideration and withdrawal of the rejections.

As previously explained on the record, the presently claimed invention is directed to an alloy type thermal fuse which uses a particular alloy composition as the material for the fuse element. This alloy composition contains Sn, In, and Bi in specified amounts, and does not contain any elements whose use is prohibited due to harmful effects on living bodies. As previously explained, these restricted elements are set forth, for example, in the European Union RoHS directive or similar legislation in the United States, and include elements such as Hg, Pb, and Cd. The thermal fuses according to the presently claimed invention thus achieve the goal of environmental conservation by protecting both individuals involved in the manufacturing of the thermal fuses and the end-users who handle them.

In contrast, JP '025 teaches an alloy-type thermal fuse using an alloy composition containing 0.3 to 6% Bi, 10 to 18% Cd, 35 to 48% Sn, and remainder (about 26-55 %) In. Including Cd in this alloy as a major component narrows the solid-liquid coexistence region to 4°C and reduces the dispersion of the operating temperature of the resulting thermal fuse. Clearly, JP '025 does not teach or suggest all of the claimed elements since it does not intentionally exclude elements whose use is prohibited due to being harmful on living bodies. In fact, by including such a large concentration of Cd, JP '025 teaches away from the presently claimed invention, which is designed to protect the people who come in contact with thermal fuses. Lee, which is cited as describing the effects of cadmium on photoplankton, does not cure the deficiency with JP '025.

For these reasons, no *prima facie* case of obviousness has been established based on JP '025 in view of Lee.

Finally, regarding the dependent claims, even the proposed combinations of JP '025 with JP '724, JP '940, JP '732 and/or GB '608 would not cure the deficiencies with JP '025. Specifically, none of these references teaches excluding Cd or other elements whose use is prohibited due to harmful effects on living bodies. In fact, JP '940 teaches that the alloy composition may contain Pb or Cd, which are both known to be harmful to humans and are limited by the RoHS directive, for example. Rather than curing the deficiencies with JP '025, each of the secondary references is cited by the Examiner for teaching structural features (such as a heating element or a Sn or Ag film) which the Examiner acknowledges are not taught or suggested by JP '025. Therefore, even if any of the proposed combinations of JP '025 with JP

'724, JP '940, JP '732 and/or GB '608 were proper, the combinations would not result in the presently claimed invention.

For all of these reasons, reconsideration and withdrawal of the § 103(a) rejections based on JP '025 in view of Lee, JP '724, JP '940, JP '732 and/or GB '608 are respectfully requested.

In view of preceding Amendments and Remarks, it is respectfully submitted that the present claims are in full compliance with § 112, patentably distinct from the prior art of record and in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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Enclosures: Petition for Extension of Time (one month), Request for Continued Examination (RCE)